

# Falls in Iowa: County Deaths and Hospitalizations

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*2009-2013 Data*



*Iowa Department of Public Health*

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## **Iowa Deaths, Hospitalization, and Hospital Charges Due to Falls**

Falls are one of the leading causes of injury hospitalization and deaths among older adults in Iowa. This report presents deaths and hospitalizations associated with falls among older adults between 2009 and 2013. Included in this report are death rates, hospitalization rates, and hospital charges for each of the 99 Iowa counties. The report utilized both the death and hospitalization data.

The Centers for Disease Control and Prevention indicates that millions of adults aged 65 and older fall each year in the United States alone. Falls can cause moderate to severe injuries, such as hip fractures and head traumas, and have been shown to increase the risk of early death. According to the World Health Organization, a fall is an event which results in a person coming to rest unintentionally on the ground or floor or other lower level. One out of three older adults falls each year, but about half of those who fall never reported or discussed their falls with a healthcare provider. Although falls are a serious public health problem, many falls are preventable.

In Iowa, between 2009 and 2013, there were a total of 140,069 deaths. Approximately 2,229 (14.6 deaths per 100,000) of these deaths were associated with falls. Of the total deaths from falls, nearly 182 deaths (6.0 deaths per 100,000) were among people between the ages of 50 and 64. People ages 65 and older had the highest total number of deaths, nearly 1,949 deaths (84.3 deaths per 100,000).

In Iowa, there were a total of 54,134 hospitalizations (3.54 hospitalizations per 1,000) due to falls between 2009 and 2013. The hospitalization rate for people ages 50 to 64 was 2.62 per 1,000 and 17.38 per 1,000 among people ages 65 and older. This indicates that people ages 65 and older had the highest rate of hospitalization compared to people ages 50 to 64. Between 2009 and 2013, among all 99 Iowa counties, Howard County had the lowest rate of hospitalizations for people ages 65 and older (3.44 per 1,000) due to falls compared to Van Buren County (34.34 per 1,000).

In 2009-2013, hospitalization charges due to falls in Iowans were nearly \$1.49 billion. The average charge per hospitalization (all ages) was \$27,569. Comparatively, the average charge for hospitalization due to falls for people ages 65 and older was \$26,388 versus \$32,630 for people ages 50 to 64. So, while the hospitalization rate for people ages 65 and older was six times greater than those ages 50 to 64, the average hospital charges were almost twenty percent lower.

Table 1: Death Rate

## Deaths Due to Falls

DEATH, 2009 – 2013 (Rate per 100,000)					DEATH, 2009 – 2013 (Rate per 100,000)				
COUNTY	Total Count (All Ages)	Death Rate (All Ages )	Death Rate (Ages 50 to 64)	Death Rate (Ages 65 and Over)	COUNTY	Total Count (All Ages)	Death Rate (All Ages)	Death Rate (Ages 50 to 64)	Death Rate (Age 65 and Over)
ADAIR	5	13.2	0.0	60.5	DELAWARE	17	19.2	10.3	93.1
ADAMS	4	20.1	0.0	92.7	DES MOINES	38	18.9	7.0	94.5
ALLAMAKEE	9	12.6	12.6	49.4	DICKINSON	6	7.1	0.0	31.5
APPANOOSE	3	4.7	0.0	22.8	DUBUQUE	54	11.4	3.2	68.4
AUDUBON	5	16.7	0.0	70.6	EMMET	6	11.8	0.0	62.4
BENTON	10	7.7	3.7	39.0	FAYETTE	11	10.6	9.0	39.2
BLACK HAWK	65	9.9	7.3	57.2	FLOYD	9	11.1	0.0	55.0
BOONE	17	12.9	0.0	70.0	FRANKLIN	6	11.3	0.0	58.2
BREMER	7	5.7	0.0	32.7	FREMONT	1	2.7	0.0	13.7
BUCHANAN	7	6.7	4.7	36.8	GREENE	8	17.3	19.0	61.9
BUENA VISTA	7	6.9	0.0	39.9	GRUNDY	3	4.8	0.0	25.3
BUTLER	4	5.4	0.0	26.6	GUTHRIE	1	1.8	0.0	9.1
CALHOUN	5	10.0	8.9	35.2	HAMILTON	9	11.6	0.0	55.9
CARROLL	11	10.6	0.0	51.7	HANCOCK	6	10.7	0.0	55.5
CASS	25	36.3	6.6	165.1	HARDIN	16	18.3	5.4	81.7
CEDAR	1	1.1	0.0	6.3	HARRISON	10	13.6	6.1	60.2
CERRO GORDO	90	41.0	12.0	206.2	HENRY	6	5.9	0.0	30.2
CHEROKEE	11	18.3	7.0	76.6	HOWARD	5	10.5	0.0	54.1
CHICKASAW	6	9.7	0.0	50.6	HUMBOLDT	7	14.3	0.0	69.9
CLARKE	1	2.1	0.0	12.8	IDA	2	5.6	0.0	13.5
CLAY	19	22.9	11.1	109.3	IOWA	4	4.9	5.6	21.0
CLAYTON	5	5.6	14.2	11.3	JACKSON	1	1.0	0.0	0.0
CLINTON	16	6.5	3.8	31.1	JASPER	8	4.4	2.6	22.3
CRAWFORD	10	11.6	6.0	64.0	JEFFERSON	5	6.0	4.4	29.7
DALLAS	11	3.2	1.8	28.2	JOHNSON	314	46.9	32.2	433.3
DAVIS	4	9.1	0.0	53.5	JONES	8	7.8	0.0	44.1
DECATUR	2	4.8	0.0	26.3	KEOKUK	3	5.8	8.7	19.7

DEATH, 2009 – 2013 (Rate per 100,000)					DEATH, 2009 – 2013 (Rate per 100,000)				
COUNTY	Total Count (All Ages)	Death Rate (All Ages )	Death Rate (Ages 50 to 64)	Death Rate (Ages 65 and Over)	COUNTY	Total Count (All Ages)	Death Rate (All Ages)	Death Rate (Ages 50 to 64)	Death Rate (Ages 65 and Over)
KOSSUTH	11	14.3	0.0	65.1	SAC	3	5.9	8.5	17.5
LEE	25	14.0	9.9	64.3	SCOTT	108	12.9	4.1	84.8
LINN	145	13.6	2.5	93.3	SHELBY	6	9.9	0.0	46.3
LOUISA	4	7.0	0.0	46.0	SIOUX	11	6.5	0.0	45.3
LUCAS	3	6.8	0.0	33.5	STORY	34	7.5	3.0	65.1
LYON	5	8.6	8.9	40.8	TAMA	7	7.9	5.4	36.5
MADISON	9	11.5	6.2	67.9	TAYLOR	1	3.2	0.0	15.4
MAHASKA	5	4.5	4.4	21.9	UNION	5	8.0	0.0	43.6
MARION	11	6.6	0.0	41.4	VAN BUREN	3	8.0	0.0	40.0
MARSHALL	49	24.0	2.4	132.8	WAPELLO	7	3.9	2.7	20.4
MILLS	7	9.3	5.6	56.8	WARREN	4	1.7	2.2	9.3
MITCHELL	5	9.3	0.0	43.1	WASHINGTON	8	7.3	0.0	41.7
MONONA	10	21.7	0.0	82.0	WAYNE	8	25.1	0.0	112.1
MONROE	4	10.0	0.0	53.6	WEBSTER	45	23.9	7.6	132.9
MONTGOMERY	5	9.4	0.0	46.6	WINNEBAGO	3	5.6	8.3	19.0
MUSCATINE	11	5.1	2.3	33.3	WINNESHIEK	11	10.5	4.6	50.0
OBRIEN	2	2.8	0.0	13.7	WOODBURY	97	19.0	12.6	113.9
OSCEOLA	1	3.2	0.0	0.0	WORTH	2	5.3	0.0	28.3
PAGE	1	1.3	0.0	6.3	WRIGHT	14	21.4	0.0	94.2
PALO ALTO	4	8.6	0.0	30.2	STATE	2,229	14.6	6.0	84.3
PLYMOUTH	4	3.2	0.0	19.0					
POCAHONTAS	3	8.3	0.0	37.1					
POLK	532	24.3	12.7	190.5					
POTTAWATTAMIE	61	13.1	4.2	79.4					
POWESHIEK	9	9.6	0.0	45.4					
RINGGOLD	2	7.8	0.0	32.8					

Table 2: Falls Hospitalization

## Hospitalizations Due to Falls

HOSPITALIZATIONS, 2009 – 2013 (Crude Rate per 1,000 Population)					HOSPITALIZATIONS, 2009 – 2013 (Crude Rate per 1,000 Population)				
COUNTY	Total Count (All Ages)	Average Rate (All Ages)	Average Rate (Ages 50 to 64)	Average Rate (Ages 65 and Over)	COUNTY	Total Count (All Ages)	Average Rate (All Ages)	Average Rate (Ages 50 to 64)	Average Rate (Ages 65 and Over)
ADAIR	88	2.34	0.96	8.52	DELAWARE	248	2.83	1.80	12.45
ADAMS	65	3.29	1.09	12.84	DES MOINES	1225	6.06	4.03	24.84
ALLAMAKEE	106	1.49	0.44	6.39	DICKINSON	299	3.56	2.07	12.49
APPANOOSE	359	5.62	3.22	21.52	DUBUQUE	1949	4.13	3.07	19.24
AUDUBON	113	3.78	1.77	13.33	EMMET	57	1.13	1.31	3.79
BENTON	415	3.18	1.88	16.30	FAYETTE	262	2.54	2.53	8.63
BLACK HAWK	2114	3.22	2.80	16.14	FLOYD	319	3.96	1.72	16.76
BOONE	561	4.27	2.06	20.69	FRANKLIN	172	3.25	1.29	14.18
BREMER	342	2.82	1.82	12.13	FREMONT	128	3.52	1.49	14.45
BUCHANAN	379	3.62	2.02	17.60	GREENE	201	4.35	2.19	17.46
BUENA VISTA	273	2.69	1.31	15.29	GRUNDY	249	4.03	1.81	17.03
BUTLER	280	3.77	1.65	15.37	GUTHRIE	249	4.60	2.70	18.33
CALHOUN	332	6.67	2.67	25.57	HAMILTON	388	5.04	2.64	22.52
CARROLL	549	5.30	2.57	24.11	HANCOCK	206	3.69	2.07	14.70
CASS	182	2.65	1.52	10.47	HARDIN	494	5.69	2.67	22.98
CEDAR	375	4.08	2.21	18.92	HARRISON	208	2.81	1.58	12.78
CERRO GORDO	981	4.48	3.16	18.04	HENRY	397	3.94	2.69	17.71
CHEROKEE	145	2.44	2.40	7.56	HOWARD	41	0.86	0.52	3.44
CHICKASAW	121	1.97	0.79	8.01	HUMBOLDT	177	3.65	1.90	14.11
CLARKE	235	5.06	2.58	24.85	IDA	233	6.63	4.23	25.77
CLAY	369	4.45	3.16	18.16	IOWA	343	4.23	2.94	18.38
CLAYTON	255	2.86	1.61	11.11	JACKSON	389	3.95	1.83	16.69
CLINTON	1161	4.75	3.49	20.48	JASPER	779	4.26	2.44	19.84
CRAWFORD	223	2.61	1.19	13.15	JEFFERSON	481	5.82	3.29	28.90
DALLAS	679	1.97	2.00	13.81	JOHNSON	1730	2.58	2.81	18.88
DAVIS	148	3.39	1.89	16.05	JONES	311	3.02	1.57	13.54
DECATUR	123	2.98	2.57	12.25	KEOKUK	211	4.05	2.78	16.29

HOSPITALIZATIONS, 2009 – 2013 (Crude Rate per 1,000 Population)					HOSPITALIZATIONS, 2009 – 2013 (Crude Rate per 1,000 Population)				
COUNTY	Total Count (All Ages)	Average Rate (All Ages)	Average Rate (Ages 50 to 64)	Average Rate (Ages 65 and Over)	COUNTY	Total Count (All Ages)	Average Rate (All Ages)	Average Rate (Ages 50 to 64)	Average Rate (Ages 65 and Over)
KOSSUTH	248	3.23	1.45	12.22	SAC	304	5.98	2.73	22.88
LEE	923	5.18	3.16	22.89	SCOTT	3610	4.31	3.38	23.46
LINN	3467	3.25	2.88	17.37	SHELBY	256	4.25	2.68	15.28
LOUISA	211	3.73	2.93	18.15	SIOUX	284	1.68	1.41	8.94
LUCAS	186	4.19	1.97	17.36	STORY	1233	2.73	2.60	19.86
LYON	52	0.90	0.18	4.93	TAMA	328	3.73	2.57	15.39
MADISON	223	2.86	2.49	12.84	TAYLOR	75	2.40	0.89	9.56
MAHASKA	372	3.33	2.13	15.29	UNION	166	2.66	1.86	10.72
MARION	420	2.53	1.78	11.92	VAN BUREN	292	7.76	2.41	34.34
MARSHALL	671	3.31	2.36	14.63	WAPELLO	971	5.48	3.92	25.58
MILLS	207	2.77	2.44	13.16	WARREN	674	2.90	2.22	14.98
MITCHELL	197	3.67	2.10	14.49	WASHINGTON	529	4.86	3.10	21.22
MONONA	214	4.69	2.42	16.35	WAYNE	224	7.04	2.41	26.58
MONROE	175	4.41	2.26	19.03	WEBSTER	874	4.64	3.23	21.52
MONTGOMERY	211	3.97	1.42	17.38	WINNEBAGO	190	3.56	2.59	13.71
MUSCATINE	745	3.48	2.76	18.10	WINNESHIEK	198	1.89	1.16	8.60
OBRIEN	137	1.94	0.52	8.02	WOODBURY	2106	4.11	4.46	20.66
OSCEOLA	35	1.11	0.71	4.33	WORTH	111	2.94	1.28	12.49
PAGE	182	2.32	1.29	9.35	WRIGHT	321	4.94	2.60	18.98
PALO ALTO	138	2.97	1.32	11.35	STATE	54,134	3.54	2.62	17.38
PLYMOUTH	577	4.66	2.69	22.36					
POCAHONTAS	159	4.40	1.28	17.93					
POLK	6,652	3.03	2.94	17.95					
POTTAWATTAMIE	1709	3.69	2.75	18.20					
POWESHIEK	440	4.71	2.62	20.39					
RINGGOLD	118	4.65	2.26	16.15					

Table 3: Hospitalization Charges

## Hospitalization Charges (\$) Due to Falls

HOSPITALIZATION CHARGES (\$), 2009 - 2013					HOSPITALIZATION CHARGES (\$), 2009 – 2013				
COUNTY	Total Charges (All Ages)	Average Charge (All Ages)	Average Charge (Ages 50 to 64)	Average Charge (Ages 65 and Over)	COUNTY	Total Charges (All Ages)	Average Charge (All Ages)	Average Charge (Ages 50 to 64)	Average Charge (Ages 65 and Over)
ADAIR	2,610,563.89	29,665.50	21,191.35	32,380.29	DELAWARE	6,980,593.85	28,147.56	35,606.54	26,987.75
ADAMS	1,368,392.00	21,052.18	27,572.67	20,467.06	DES MOINES	35,697,154.84	29,140.53	32,853.49	29,424.40
ALLAMAKEE	1,876,606.23	17,703.83	20,634.66	14,230.94	DICKINSON	6,815,738.25	22,795.11	22,815.44	23,061.46
APPANOOSE	7,063,768.60	19,676.24	25,354.43	19,183.74	DUBUQUE	50,586,803.55	25,955.26	28,526.68	24,505.71
AUDUBON	2,719,487.37	24,066.26	23,157.10	24,256.15	EMMET	1,029,430.79	18,060.19	15,549.54	19,564.12
BENTON	12,183,240.73	29,357.21	31,787.30	28,368.84	FAYETTE	8,433,926.48	32,190.56	39,662.80	29,492.15
BLACK HAWK	56,925,544.09	26,927.88	31,919.83	25,656.19	FLOYD	5,871,066.01	18,404.60	29,178.11	17,521.23
BOONE	14,323,229.86	25,531.60	29,882.52	24,377.15	FRANKLIN	4,179,146.26	24,297.36	28,861.35	23,163.62
BREMER	9,729,570.56	28,449.04	37,489.99	26,273.88	FREMONT	3,038,423.85	23,737.69	24,673.73	22,306.02
BUCHANAN	10,535,662.81	27,798.58	25,703.00	27,358.92	GREENE	5,056,624.82	25,157.34	36,405.33	23,398.13
BUENA VISTA	5,990,778.79	21,944.24	34,230.30	20,385.00	GRUNDY	6,664,214.43	26,763.91	53,412.61	23,956.87
BUTLER	7,792,573.33	27,830.62	27,854.07	26,824.24	GUTHRIE	5,734,340.54	23,029.48	35,710.50	21,450.07
CALHOUN	6,555,118.37	19,744.33	29,621.27	18,606.73	HAMILTON	10,104,050.69	26,041.37	29,690.23	25,109.76
CARROLL	11,297,370.37	20,578.09	20,933.96	20,348.16	HANCOCK	4,475,445.32	21,725.46	18,280.69	21,202.99
CASS	3,334,703.20	18,322.55	21,042.43	17,926.77	HARDIN	9,226,762.82	18,677.66	22,797.83	17,603.08
CEDAR	10,431,125.13	27,816.33	36,825.31	27,084.50	HARRISON	4,932,037.14	23,711.72	23,634.96	23,946.42
CERRO GORDO	23,517,905.56	23,973.40	26,982.06	23,745.62	HENRY	11,140,038.64	28,060.55	34,743.80	27,329.76
CHEROKEE	4,446,672.68	30,666.71	32,112.19	28,989.70	HOWARD	609,474.45	14,865.23	21,049.46	13,857.39
CHICKASAW	3,399,204.07	28,092.60	27,347.34	24,229.59	HUMBOLDT	5,137,709.79	29,026.61	44,836.05	27,672.46
CLARKE	4,944,963.95	21,042.40	20,770.97	20,908.73	IDA	4,856,100.86	20,841.63	20,844.72	20,892.59
CLAY	8,232,951.35	22,311.52	20,745.55	22,499.81	IOWA	11,242,273.04	32,776.31	52,096.88	29,676.07
CLAYTON	6,882,083.82	26,988.56	26,538.16	27,115.81	JACKSON	10,655,604.93	27,392.30	29,567.62	26,644.54
CLINTON	33,357,998.03	28,732.13	32,130.26	27,823.59	JASPER	19,021,279.10	24,417.56	32,155.26	22,569.49
CRAWFORD	5,352,034.56	24,000.15	19,153.71	24,242.81	JEFFERSON	10,812,478.25	22,479.16	30,768.93	20,016.80
DALLAS	24,245,906.14	35,708.26	44,786.20	34,076.70	JOHNSON	52,654,909.81	30,436.36	36,636.10	28,579.96
DAVIS	3,189,969.41	21,553.85	18,376.47	21,855.33	JONES	10,090,885.97	32,446.58	45,316.19	29,683.63
DECATUR	3,646,052.01	29,642.70	34,741.53	28,706.48	KEOKUK	5,868,129.22	27,811.04	31,131.61	27,126.75

HOSPITALIZATION CHARGES (\$), 2009 - 2013					HOSPITALIZATION CHARGES (\$), 2009 – 2013				
COUNTY	Total Charges (All Ages)	Average Charge (All Ages)	Average Charge (Ages 50 to 64)	Average Charge (Ages 65 and Over)	COUNTY	Total Charges (All Ages)	Average Charge (All Ages)	Average Charge (Ages 50 to 64)	Average Charge (Ages 65 and Over)
KOSSUTH	4,153,234.61	16,746.91	26,124.76	15,444.75	SAC	5,744,651.74	18,896.88	29,889.97	17,613.49
LEE	21,595,491.24	23,397.07	28,016.92	22,165.03	SCOTT	101,089,953.56	28,002.76	33,099.77	26,871.49
LINN	105,191,149.25	30,340.68	31,913.57	29,505.48	SHELBY	4,872,389.09	19,032.77	19,680.26	18,960.06
LOUISA	6,120,534.50	29,007.27	29,116.00	27,224.27	SIOUX	6,392,744.55	22,509.66	25,504.04	21,976.21
LUCAS	4,442,840.05	23,886.24	39,573.35	19,454.74	STORY	34,309,985.70	27,826.43	30,241.17	27,366.81
LYON	523,105.89	10,059.73	35,390.45	9,129.62	TAMA	10,050,318.05	30,641.21	38,513.14	30,130.30
MADISON	8,002,413.79	35,885.26	34,746.89	35,572.44	TAYLOR	1,651,589.59	22,021.19	25,233.51	20,977.90
MAHASKA	8,503,558.32	22,859.03	28,252.65	21,755.27	UNION	4,591,022.33	27,656.76	32,873.94	26,372.07
MARION	12,424,667.08	29,582.54	42,928.35	27,969.07	VAN BUREN	5,926,019.96	20,294.59	31,224.81	19,190.78
MARSHALL	19,496,606.71	29,056.05	33,098.66	28,051.54	WAPELLO	24,322,351.30	25,048.77	25,048.69	24,331.72
MILLS	6,316,854.08	30,516.20	31,162.03	31,557.62	WARREN	23,077,420.92	34,239.50	33,980.74	33,321.17
MITCHELL	2,485,179.13	12,615.12	12,834.43	12,404.39	WASHINGTON	14,380,222.08	27,183.78	42,564.27	24,069.77
MONONA	5,451,925.75	25,476.29	30,615.40	23,839.61	WAYNE	4,232,983.10	18,897.25	21,153.51	18,481.44
MONROE	3,767,324.36	21,527.57	39,055.77	16,874.62	WEBSTER	24,970,340.86	28,570.18	31,208.87	27,822.43
MONTGOMERY	5,865,752.35	27,799.77	29,824.85	27,792.01	WINNEBAGO	4,926,430.10	25,928.58	29,239.21	24,098.37
MUSCATINE	23,008,656.19	30,884.10	33,369.51	30,440.44	WINNESHIEK	2,722,925.61	13,752.15	16,624.78	12,822.52
OBRIEN	3,027,295.02	22,097.04	27,122.26	22,100.50	WOODBURY	59,083,328.97	28,054.76	29,197.48	28,671.70
OSCEOLA	755,467.86	21,584.80	26,425.82	16,366.06	WORTH	2,980,523.49	26,851.56	23,565.61	26,232.89
PAGE	3,596,219.19	19,759.45	19,415.96	19,852.48	WRIGHT	7,563,630.17	23,562.71	37,344.50	20,549.58
PALO ALTO	2,167,437.09	15,706.07	23,321.15	14,885.09	STATE	\$1,492,427,114.53	\$27,569.13	\$32,630.23	\$26,388.66
PLYMOUTH	11,615,536.29	20,130.91	22,128.91	19,759.25					
POCAHONTAS	2,631,485.75	16,550.22	31,581.01	14,545.61					
POLK	228,288,562.67	34,318.79	40,410.86	33,755.28					
POTTAWATTAMIE	49,860,290.19	29,175.13	32,271.27	29,660.32					
POWESHIEK	10,337,518.07	23,494.36	33,673.47	22,196.35					
RINGGOLD	3,041,057.32	25,771.67	27,512.14	25,889.46					



## **Summary**

Falls among older adults appear to be a major public health problem, with nearly 182 deaths among people aged 50 to 64 years. Moreover, falls contribute to the rising medical charges experienced by many older adults. The average fall related hospitalization charges for adults 50 to 65 years old was \$5,061 compared to the average hospital charges for all ages. Efforts to reduce falls in Iowa need to focus on adults ages 50 and over who are especially prone to falls. It is imperative to recognize that nearly half of falls are underreported and that falls are preventable. Both the death data and hospitalization data do not include falls that were not reported, thus, leaving us unable to adjust the rates of falls accordingly within this population.

## **References**

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